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BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
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In cooperation with State, Federal and Other Agencies

COTTON INSECT CONDITIONS FOR WEEK ENDING JULY 22, 1950
(Eighth Cotton Insect Survey Report for 1950)

Statements that insecticides needed for cotton insect control are inadequate to meet demands are being received from practically all sections. Reports on insect infestations indicate the continuous need for use of insecticides if this season's crop is to be protected. Most of the statements concerning short supply refer to the newer insecticides.

Suggestions are current that sections or states be declared emergency areas so that they might receive first priority for available supplies. It has also been suggested that emergency areas be made the basis for securing "allocations" of raw materials needed to manufacture certain chemicals, especially toxaphene, DDT and BHC, essential for the production of the newer chlorinated hydrocarbon insecticides. There is no established formula for declaring emergency areas because of shortage of insecticides. Nor is there a procedure for securing chemicals which are in short supply and allocating them for the use in manufacturing insecticidal chemicals. Certain raw materials such as chlorine and benzene needed in the production of insecticidal chemicals -- toxaphene, DDT, benzene hexachloride -- are also required for the manufacture of many kinds of materials of immediate importance in our present economy, including war needs and matters directly concerned with the protection of health and disposal of waste.

If procedures were available to declare emergency areas because of shortages of special kinds of insecticides and if the raw materials required for their production could be channelized through allocation, the desired insecticides could not be made available to the farmer in time for effective use this season. It must be remembered that it takes time to combine the raw materials into the insecticidal chemical which is shipped to manufacturers of insecticides who then produce and distribute the product that the farmer uses.

Interested agencies, including industry, are doing what can be done to secure additional supplies of needed raw materials to increase the quantity of finished insecticides and deliver these to areas of need and demand. Where it is plausible to shift available stocks to meet demands, this is also receiving attention.

The production of calcium arsenate does not involve the same problems of time in production and distribution to the farmer. Industry is endeavoring to produce and distribute this well-known, standard cotton insecticide to meet the needs and demands for means of crop protection. It is hoped their efforts will provide materials that can be used to prevent crop losses.

While insecticides needed for cotton insect control are in close balance, there is nothing which now indicates that crop losses need to occur because the farmer is unable to secure insecticides that will effect control. This condition can continue only through wise use of materials and a willingness to forego hoarding materials that are not actually required. Farmers are urged to use insecticides wisely, and apply any of the kinds of materials of established value if the kind they prefer cannot be secured.

-- S. A. Rohwer

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INSECTICIDES AND DEFOLIANTS AND
EQUIPMENT FOR APPLYING THEM

South Carolina: The summary statement that accompanied the Cotton Letter issued by the Extension Service, Clemson College, on July 18, mentions shortages of toxaphene in Clarendon, Dillon, and McCormick Counties; shortages of the mixture containing 3% gamma benzene hexachloride and 5% DDT in Calhoun and Dillon Counties; of chlordane in Berkeley and Spartanburg Counties, and of defoliants in Orangeburg and Spartanburg Counties. Shortages of hand dusters were reported to occur in Fairfield and Oconee Counties; mule dusters in McCormick and Oconee Counties; tractor dusters in Berkeley and York Counties; spray machines in Berkeley, Fairfield, Newberry, and York Counties, and shortages of all types of dusting and spraying equipment were reported in Dillon County.

Alabama: Glynn B. Wood and Clifford D. Porterfield reported on July 15: "A survey by the Extension Service indicated that there is a shortage of insecticides in Alabama, principally north of Birmingham. Twenty counties had an adequate supply of insecticides for control at this time. Forty-one counties reported the supply as being inadequate; eleven counties reported enough to go through the season;" and on July 22 they wrote: "Dealers and County Agents indicate there is no immediate shortage of insecticides. Farmers and dealers in the northern part of the State have bought insecticides in the southwest thereby reducing the supply in the southwestern counties."

W. A. Ruffin, Extension Entomologist, reported on July 24: "We have made a serious effort to keep up with the cotton insect situation in Alabama throughout the spring and summer months. I have attended more meetings and talked to more farmers concerning the control of these pests this year than in any previous year. There is far more interest in the control of cotton insects among farmers in Alabama than I could have hoped for. I would say that at present three or four times as many farmers are applying insecticides to cotton in Alabama than ever applied poison to cotton before.

"As best we could estimate, around the first of July farmers and others in Alabama had on hand approximately 40,000,000 pounds of cotton insecticides. This figure can be compared with the total of 17,000,000 pounds used in 1949. We do at the present time have somewhat of a shortage of insecticides. Frankly, I expect the situation to be worse two or three weeks from now than it is at the present if we have anything like normal weather. We are still getting limited shipments of insecticides from other sections, but mixers in Alabama have been out of basic material since about the first of July. They do not expect to be able to obtain additional allotments before or about the 10th of August."

Oklahoma: C. F. Stiles, Extension Entomologist, wrote on July 22: "The demand for cotton insecticides has not been too great during the past week since it has been impossible for farmers to get into their fields. In a few instances, airplanes have been called in to apply insecticides. Reports indicate that the insecticides have been washed off within a few hours after being applied. It has been raining on the average of about twice a day for 10 days. We are expecting a big run on insecticides just as soon as the weather clears."

Texas: K. P. Ewing, Waco, telegraphed on July 24: "Leafworm has created an emergency and there is a shortage of insecticides in many sections of Texas, especially in the northern two-thirds of the State. Several millions of acres will probably need protection for several weeks from leafworm."

New Mexico: L. H. Moore, Extension Entomologist, reported on July 24: "In the Mesilla, Pecos, and Mimbres Valleys the supply of insecticides appears adequate. In the

isolated valleys like the Fort Sumner area there is a definite need for more insecticides and equipment. Leafworm damage in this area is reaching the critical stage with recommended insecticides being very scarce. Due to the small demand for materials in areas such as this it is hard to persuade the local dealers to stock insecticides in advance."

Excerpts from Weekly Cotton Weather Bulletin issued by the Weather Bureau, U. S. Department of Commerce, New Orleans, Louisiana, July 18:

Weather and Cotton over the Belt: Cool, wet weather was generally detrimental to cotton prospects since it increased boll weevil activity and hampered or prevented control measures; infestation continues generally high.

Texas: Insect damage increased central and northeast as showery weather hampered control measures.

Oklahoma: Cool, damp weather favorable for development boll weevil grubs, cotton fields heavily infested; cotton a little later than normal but stands are good; except for boll weevil prospects would be good to excellent.

Louisiana: Showers, resultant lower temperatures detrimental to cotton, increasing weevil activity, delaying cultivation, poisoning.

Mississippi: Boll weevil activity increased rapidly northern half but decreased some southeast; cotton blooming, fruiting freely, cultivation, poisoning largely halted.

Tennessee: Cotton continued good progress but with some boll weevil infestation.

Alabama: Cotton growing rapidly but weevil poisoning hampered by rains.

Georgia: Weather unfavorable for controlling weevils and other pests.

South Carolina: Showers prevented effective weevil poisoning.

North Carolina: Crop delayed by cool, wet weather; control boll weevil very difficult with heavy infestation.

Arizona: Scattered dusting, spraying for lygus and mites.

New Mexico: Insect infestation increasing due to damp weather.

BOLL WEEVIL

North Carolina: First generation weevils became very active during the week in southern areas. Few weevils were observed in northern counties. Weevils were found in 131 of the 136 fields that had received poison applications in 28 counties at an average rate of 14% punctured squares. Infestation was less than 11% in 73 fields; from 11 to 50% in 60 fields, and in 2 fields in Rutherford County more than 50% of the squares were punctured. All of the 111 unpoisoned fields examined in the same 28 counties were infested at the average rate of 54% punctured squares. In one unpoisoned field in Harnett County the infestation was less than 11%. In 48 fields it ranged from 11 to 50% and in 62 fields more than 50% of the squares were punctured. Boll weevils are more than 4 times as numerous now in the untreated fields as in the poisoned fields.

South Carolina: The Extension Service Cotton Letter issued at Clemson College on July 18 states that the average boll weevil infestation in the poisoned fields examined in 39 counties was 15% punctured squares as compared with 13% the previous week.

In the unpoisoned fields 61% of the squares were punctured as compared with 59% punctured squares the previous week. There was an average increase of 2% punctured squares in both poisoned and upoisoned fields. These records indicate that in all parts of the State where insecticides are being used properly the boll weevil infestations are being held in check. There are only 1/4 as many weevils in the treated fields as in the untreated fields.

The entomologists at Florence reported that during the week ending July 22, the average infestation in 90 unpoisoned fields in 18 counties was 82% punctured squares as compared with 66% the previous week. All of the fields examined had more than 50% of the squares punctured and in no county was the average infestation lower than 78%. In 45 poisoned fields in 15 counties the average infestation was 43% punctured squares as compared with 11% the previous week. In only 3 of the 45 fields examined was the infestation as low as 25%. The boll weevil infestations are becoming increasingly serious, and probably there has been some let-up in the proper application of insecticides for weevil control. The records indicate that the boll weevil situation is more serious now than it was one year ago. The average infestation in the unpoisoned fields is now 82% punctured squares as compared with 72% a year ago and the average infestation in the poisoned fields is now 43% as compared with 21% punctured squares a year ago.

Georgia: Boll weevils were found in 472 of the 473 fields examined in 97 counties. In 60 fields more than 50% of the squares were punctured, in 147 fields the infestations ranged between 26 and 50% punctured squares, in 149 fields the range was between 11 and 35% punctured squares, in 116 fields less than 11% of the squares were punctured, and only one field in Turner County was apparently free of weevils.

Alabama: Boll weevils were found in all of the 69 fields examined in 10 southwestern counties. No fields were found with less than 18% punctured squares. In most of the fields the infestation ranged between 26 and 50% punctured squares. Fields with more than 75% punctured squares were reported in Dallas, Marengo, and Escambia Counties. The average infestation in the 69 fields was 44% punctured squares.

Tennessee: Boll weevils were found in all of the 32 fields examined in Fayette, Hardeman, McNairy, and Shelby Counties at an average rate of 27% punctured squares as compared with 32% the previous week. Infestation ranged from 1 to 25% in 18 fields; from 26 to 50% in 9 fields, and in 5 fields more than 50% of the squares were punctured.

Mississippi: Clay Lyle, Entomologist, reported on July 24 that this is the most critical period for the cotton crop and advised growers to go the limit during the next four weeks to protect what they have already made. Examinations during the past week on 637 farms in 41 counties showed 570 with weevils, at an average infestation of 20%, which compares with 18% last week and 34% at this time last year.

"This is about the last week for saving a crop on any heavily-infested cotton which has not already been poisoned. A crop set after this date runs the risk of early frosts besides requiring continuous protection against bollworms, leafworms, migrating boll weevils and other pests."

Boll weevils were found in 482 of the 544 fields examined in 17 Delta Counties at an average rate of 18% punctured squares as compared with 17% the previous week and 31% a year ago. The infestation ranged from 1 to 10% in 216 fields; from 11 to 25% in 135 fields; from 26 to 50% in 98 fields, and in 33 fields more than 50% of the squares were punctured.

Louisiana: Boll weevils continue to emerge from hibernation cages at Tallulah. In only one year (1937) did weevils continue to emerge from hibernation cages until

July 20. The emergence from May 1 to July 20 as compared with the past 19 years is as follows:

Boll Weevil Survival		Boll Weevil Survival	
Year	in Hibernation Cages	Year	in Hibernation Cages
	from May 1 to July 20		From May 1 to July 20
	Percent		Percent
1950	17.10	1940	.02*
1949	4.04*	1939	1.94*
1948	.38*	1938	.76*
1947	1.84*	1937	18.84
1946	9.28*	1936	.12*
1945	15.42*	1935	.48*
1944	2.42*	1934	4.24*
1943	1.00*	1933	.44*
1942	.08*	1932	16.44*
1941	17.64*		
* Emergence completed			

Local showers and general rains over the State were favorable for weevil development. The average infestation in 600 fields in 27 parishes was 21% punctured squares as compared with 20% last week and 18% two weeks ago. No punctured squares were found in 7 fields. The infestation ranged from 1 to 10% in 212 fields; from 11 to 25% in 192 fields; from 26 to 50% in 148 fields, and in 41 fields more than 50% of the squares were punctured.

The average seasonal boll weevil infestation by years from 1943 to 1950, inclusive, is as follows:

Year	Week Ending									
	June		July				August			
	22	29	6	13	20	27	3	10	17	24
1950	--	26	18	20	21					
1949	--	13	13	15	18	26	32	34	--	--
1948	--	6	7	11	14	20	21	32	--	--
1947	--	--	15	17	21	21	19	15	16	--
1946	17	35	24	41	49	51	68	73	--	--
1945	--	--	16	18	27	28	31	54	54	73
1944	--	10	10	8	9	15	10	21	14	--
1943	--	10	10	9	15	19	20	33	--	--

Arkansas: General rains and cloudy weather were favorable for weevil development and infestations increased in most areas. In the examination of 71 fields in 6 south-eastern counties the infestation averaged 20% punctured squares as compared with 10% last week and 15% two weeks ago. No punctured squares were found in 5 fields in Desha, Chicot, and Lincoln Counties. The infestation ranged from 1 to 10% in 21 fields; from 11 to 25% in 23 fields; from 26 to 50% in 16 fields, and more than 50% of the squares were punctured in 6 fields. In 21 fields examined in 3 southwestern counties the average infestation was 46% punctured squares as compared with 41% last week. The infestation ranged from 1 to 25% in 4 fields; from 26 to 50% in 6 fields and in 11 fields more than 50% of the squares were punctured. In Jackson, Monroe, Phillips, and Pulaski Counties the infestation in 336 fields averaged 4%. No punctured squares were found in 143 fields. The infestation ranged from 1 to 10% in 145 fields; from 11 to 25% in 34 fields; and from 26 to 50% in 14 fields.

Texas: Boll weevils continue to cause serious damage in many fields but over the State there was only a slight increase in the infestation. The average infestation in 900 fields examined in 93 counties was 25% punctured squares as compared with 24% the previous week. These figures compared with 15% last year and 20% at this time in 1948. No weevils were found in 85 of the 900 fields examined. The infestation ranged from 1 to 10% punctured squares in 272 fields; from 11 to 25% in 188 fields; from 26 to 50% in 211 fields, and in 144 fields more than 50% of the squares were punctured.

Oklahoma: The Oklahoma Weekly Crop and Weather Bulletin issued at Oklahoma City on July 18 states: "The cool, damp weather during the week was favorable for the development of boll weevil grubs and cotton fields are heavily infested. Cotton is a little later than normal but stands are good. The growing condition is generally fair. But for the boll weevil infestation, prospects would be generally good to excellent. Boll weevils are present in the southwestern counties."

C. F. Stiles, Extension Entomologist, wrote on July 22: "You can see from the amount of rainfall we have had over the State that the cotton-farmers are going to have an up-hill fight with the weevils again this season."

"The report of boll weevil damage in Beckham County has been checked into and found to be false, but we do know that boll weevils are present in both Jackson and Tillman Counties."

The average infestation in 84 fields examined in 15 counties was 31% punctured squares. No weevils were found in 3 fields. The infestation ranged from 1 to 25% in 47 fields; from 26 to 50% in 8 fields, and in 26 fields more than 50% of the squares were punctured.

COTTON LEAFWORM

Texas: Heavy cotton leafworm infestations have developed and control measures have become necessary in many areas, particularly in the southern, central, and western sections. Leafworms were found in 24 counties the past week, in addition to the 30 counties reported last week, making a total of 84 counties known to be infested. Many farmers in the central portion of the State let this insect strip a large portion of the leaves from the plants before the insect was found and before control measures were used.

Oklahoma: C. F. Stiles, Extension Entomologist, reported on July 22: "Cotton leafworms continue to spread slowly over the entire cotton producing area of the State, and they are reported ragging cotton in a number of fields in Pontotoc County."

Louisiana: Cotton leafworms are now known to occur in 12 parishes. In addition to 3 parishes reported infested last week leafworms have been found in Tensas, Concordia, Ouachita, and Bossier Parishes. Vermilion is the only parish in which poisoning for leafworms has been reported.

Arkansas: The Sixth Cotton Insect Survey Report quoted a telegram from Dr. Charles Lincoln, Extension Entomologist, dated July 12: "Cotton leafworm found Jackson County small numbers." Dr. Lincoln submitted 1 larva and 3 pupae of the cotton leafworm that were collected in Jackson County on July 11. His determination of these insects was verified by Dr. J. G. Franclemont of the Division of Insect Identification. Since pupae of the cotton leafworm were collected in Jackson County on July 11 the moths undoubtedly reached that county during June. Since Jackson County is in the northeastern part of the State and the cotton leafworm by July 22 had been reported from 123 counties in Texas, Oklahoma, Louisiana, and Mississippi, these insects probably occur in other counties in Arkansas.

Missouri; Tennessee; Kentucky; Illinois: Although no cotton leafworms have yet been reported or received from these States, it is quite likely that the leafworm moths have already reached them. By July 22 authentic records had been received of the appearance of cotton leafworms in 124 counties in Texas, Oklahoma, Arkansas, Louisiana, and Mississippi.

New Mexico: L. H. Moore, Extension Entomologist, wrote on July 24: "County Agent Riersen reports cotton leafworm found in Eddy County June 27. On July 6 I was over there and found third instar larvae. On June 26 second and third instar larvae were taken by E. J. O'Neal and Reid Faulkner in Dona Ana County. On the same day I found third instar larvae in DeBaca County doing considerable damage." On July 21 W. B. Rogers reported a light infestation of cotton leafworms in Eddy and Chaves Counties.

MISCELLANEOUS INSECTS

Georgia: The tobacco budworm, Heliothis virescens (F.) is apparently the most abundant of the lepidopterous larvae that are attacking cotton. On June 28 George M. Sutton of the Georgia Coastal Plain Experiment Station collected seventeen "bollworms" on cotton in Clay County. Dr. J. G. Franclemont found that this collection consisted of 16 tobacco budworms, H. virescens (F.) and one bollworm, H. armigera (Hbn.).

Alabama: Glynn B. Wood and Clifford D. Porterfield reported that the outbreak of the tobacco budworm, Heliothis virescens (F.), on cotton in south Alabama declined during the week ending July 22. Aphids were noted in 54 of the 69 fields examined in 10 counties in southwestern Alabama. No heavy infestations were found. They reported infestations of the large American grasshopper, Schistocerca americana (Drury), in Autauga County in central Alabama. Based on several counts in cotton fields they estimated the populations have ranged from 70,000 to 112,000 grasshoppers per acre. Counts on corn gave from 11 to 42 grasshoppers per stalk.

During the last week of June Glynn B. Wood and Clifford D. Porterfield collected 19 lepidopterous larvae on cotton in Covington, Geneva and Houston Counties. Dr. J. G. Franclemont determined all of these larvae as the tobacco budworm, Heliothis virescens (F.). This species is apparently the most abundant "bollworm" attacking cotton in Alabama.

All of the lepidopterous larvae collected on cotton in Tuscaloosa, Marion, and Morgan Counties on July 4, 5, and 7 by Glynn B. Wood, Auburn, were determined by J. G. Franclemont as the tobacco budworm, Heliothis virescens (F.).

Mississippi: Lepidopterous larvae were reported in 135 of the 544 fields examined in 17 Delta Counties at an average rate of 3.4% injured squares, and only 7 had above 10% of the squares injured.

Tennessee: Lepidopterous larvae were reported in 11 of 32 fields examined in 4 counties at an average rate of 1.5% punctured squares. Tarnished plant bugs were reported in 8 fields and rapid plant bugs in 2 fields. Of the 11 fields infested by lepidopterous larvae no infestation was above 2% injured squares.

Louisiana: Many complaints have been received of lepidopterous larvae injuring squares and bolls. In Madison Parish records were made of this injury while examining 38,700 squares for boll weevil punctures. An average of 0.2% was injured as compared with 0.3% last week and 3.4% two weeks ago.

G. L. Smith, Tallulah, submitted 41 lepidopterous larvae in 10 lots collected from cotton in Madison Parish between June 19 and July 3. This collection consisted of

30 tobacco budworms, Heliothis virescens (F.), 7 bollworms, Heliothis armigera (Hbn.), 2 yellow-striped armyworms, Prodenia ornithogalli Gn., 1 specimen of a looper, Autographa group, and 1 specimen belonging to the family Tortricidae and probably to the genus Platynota (determinations by J. G. Franclemont and H. W. Capps). The 30 specimens of the tobacco budworm, Heliothis virescens (F.), were scattered among 8 of the 10 lots submitted and the 7 specimens of the bollworm, Heliothis armigera (Hbn.), were in 6 of the lots.

INSECTS ON IRRIGATED COTTON OF THE SOUTHWEST

Arizona: The injurious hemipterous insect populations on cotton continued high in the Salt River Valley. Pentatomids, mainly the brown stink-bug, Euschistus impictiventris (adults), increased in many cotton fields in the Palo Verde and Buck-eye areas. Stink-bug counts as high as 36 per 100 net strokes were found in some of these fields. Stink-bug populations are fairly low in most of the other cotton areas but are on the increase. Most of the cotton fields are being dusted with DDT wherever bollworms are noted. A good many farmers are now dusting or spraying with a combination of insecticides. Lygus spp. and cotton fleahoppers in general remain low in the Santa Cruz and Safford Valleys, but have built up in sufficient numbers in some areas to warrant control. Bollworm infestations are increasing and insecticides have been applied for their control in some fields.

New Mexico: Injurious hemipterous insect populations continue low in Eddy and Chaves Counties, although insecticides have been applied in a few fields for their control.

Texas: Bollworms are increasing in the El Paso area but only a few fields need poison. Counts in a few fields showed infestations as high as 14 larvae per 100 terminals.

Mr. F. G. Crittenden, Entomologist for the Paul Davidson farm at Pecos wrote on July 18 that during the first few days of July bollworm eggs averaged 4 or 5 per 100 terminals and larvae one or less in the Pecos Valley. Counts in 20 fields on July 11-12 showed an average of 32 eggs per 100 terminals. On July 14-15 counts in 10 fields averaged 30 newly hatched larvae and 40 eggs per 100 terminals.

Cotton leafworms were found in nearly all fields examined in El Paso and Hudspeth Counties. Mr. Crittenden made his first finding of larvae at Pecos on June 26 and pupae on July 11.

Injurious hemipterous cotton insects increased considerably during the week on fields that had not been poisoned in the El Paso area. Lygus spp. predominate.

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